

CLAIMS

What is claimed is:

1. A device for manufacturing of a rotary cutting die, comprising a cylinder 1
5 which is turned around the Y axis; a router 4 which is traveled along the X axis which is
perpendicular to the cylinder 1; a silicone rubber sheet 6 for covering veneers 31 which
are disposed on the circumference of the cylinder 1, being coated with adhesive; and a
vacuum pump 16 for evacuating the air between the cylinder 1 and the silicone rubber
sheet 6.

10 2. A method for manufacturing of a rotary cutting die, wherein a cylinder 1 on
which an upper plywood 3 or a lower plywood 2 is fixed and which is turned around the
Y axis and a router 4 which is traveled along the X axis perpendicular to the cylinder 1
and along the Z axis vertical to the cylinder 1 are used to cut a groove in the upper
plywood 3 or the lower plywood 2, and the upper plywood 3 and the lower plywood 2
15 are bonded to each other.

3. A method for manufacturing of a rotary cutting die, comprising the steps of:
placing nine veneers 31 each having a thickness of approx. 1 mm that are coated
with adhesive on a cylinder 1; covering the nine veneers 31 with a silicone rubber sheet
6; by means of a vacuum pump 16, evacuating the air between the cylinder 1 and the
20 silicone rubber sheet 6 to force the nine veneers 31 to be wrapped around the outside
surface of the cylinder 1; and solidifying the adhesive;

after the solidification by the above step, removing the silicone rubber sheet 6; and
using a router 4 to cut a 4-point-wide (1.4-mm-wide) groove in a lower plywood 2 for
allowing a steel rule 5 to be inserted thereinto;

25 placing additional four veneers 31 which are coated with adhesive on said lower

plywood 2; covering the four veneers 31 and the lower plywood 2 with the silicone rubber sheet 6; by means of a vacuum pump 16, evacuating the air between the cylinder 1 and the silicone rubber sheet 6 to force the four veneers 31 to be wrapped around the outside surface of the lower plywood 2; and solidifying the adhesive; and

5 after the solidification by the above step, removing the silicone rubber sheet 6; and using the router 4 to cut a 4-point-wide (1.4-mm-wide) groove in the upper plywood 3 for allowing the steel rule 5 to be inserted thereinto.

4. A method for manufacturing of a rotary cutting die, comprising the steps of:

placing nine veneers 31 each having a thickness of approx. 1 mm that are coated
10 with adhesive on the top side thereof on a cylinder 1 (a ninth veneer 31 being not coated with adhesive); on the nine veneers 31, placing four veneers 31 each having a thickness of approx. 1 mm that are coated with adhesive on the top side thereof (a fourth veneer 31 being not coated with adhesive); covering the four veneers 31 and the nine veneers 31 with a silicone rubber sheet 6; by means of a vacuum pump 16, evacuating the air
15 between the cylinder 1 and the silicone rubber sheet 6 to force the veneers 31 to be wrapped around the outside surface of the cylinder 1; and solidifying the adhesive;

after the solidification by the above step, removing said silicone rubber sheet 6; removing an upper plywood 3, with which said four veneers 31 are laminated; and using a router 4 to cut a 4-point-wide (1.4-mm-wide) groove in a lower plywood 2 of said
20 nine veneers 31 for allowing a steel rule 5 to be inserted thereinto; and

replacing said upper plywood 3, with which four veneers 31 are laminated, and which has been temporarily removed from the cylinder 1, on said lower plywood 2; and using the router 4 to cut a 4-point-wide (1.4-mm-wide) groove in the upper plywood 3 for allowing the steel rule 5 to be inserted thereinto.

25 5. A rotary cutting die, wherein internal panels 22 are provided in a lower

plywood 2, with which nine veneers 31 are laminated, such that each internal panel 22 is capable of being unloaded from the lower plywood 2 to be used as a gage for bending blade, and is capable of being reloaded into the lower plywood 2.

6. A device for manufacturing a rotary cutting die, comprising a cylinder 1 which
5 is turned around the Y axis; a router 4 which is traveled along the X axis perpendicular to the cylinder 1; a thick cloth 61 for covering veneers 31 which are disposed on the circumference of the cylinder 1, being coated with adhesive; and winding-up rollers 63 for causing the veneers 31 to be wrapped around the cylinder 1.

7. A method for manufacturing of a rotary cutting die, comprising the steps of:
10 placing nine veneers 31 each having a thickness of approx. 1 mm that are coated with adhesive on a cylinder 1; covering the nine veneers 31 with a thick cloth 61; by means of rollers 63, winding-up the thick cloth 61 to force the nine veneers 31 to be wrapped around the outside surface of the cylinder 1; and solidifying the adhesive;

after the solidification by the above step, removing said thick cloth 61; and using a
15 router 4 to cut a 4-point-wide (1.4-mm-wide) groove in a lower plywood 2 for allowing a steel rule 5 to be inserted thereinto;

placing additional four veneers 31 which are coated with adhesive on said lower plywood 2; covering the four veneers 31 and the lower plywood 2 with said thick cloth 61; by means of the rollers 63, winding-up the thick cloth 61 to force the four veneers
20 31 to be wrapped around the outside surface of the lower plywood 2; and solidifying the adhesive; and

after the solidification by the above step, removing said thick cloth 61; and using the router 4 to cut a 4-point-wide (1.4-mm-wide) groove in the upper plywood 3 for allowing the steel rule 5 to be inserted thereinto.

25 8. A method for manufacturing of a rotary cutting die, comprising the steps of:

placing nine veneers 31 each having a thickness of approx. 1 mm that are coated with adhesive on the top side thereof on a cylinder 1 (a ninth veneer 31 being not coated with adhesive); on the nine veneers 31, placing four veneers 31 each having a thickness of approx. 1 mm that are coated with adhesive on the top side thereof (a fourth veneer 31 being not coated with adhesive); covering the four veneers 31 and the nine veneers 31 with a thick cloth 61; by means of rollers 63, winding-up the thick cloth 61 to force the veneers 31 to be wrapped around the outside surface of the cylinder 1; and solidifying the adhesive;

after the solidification by the above step, removing said thick cloth 61; removing an upper plywood 3, with which said four veneers 31 are laminated; and using a router 4 to cut a 4-point-wide (1.4-mm-wide) groove in a lower plywood 2 of said nine veneers 31 for allowing a steel rule 5 to be inserted thereinto; and

replacing said upper plywood 3, with which four veneers 31 are laminated, and which has been temporarily removed from the cylinder 1, on said lower plywood 2; and using the router 4 to cut a 4-point-wide (1.4-mm-wide) groove in the upper plywood 3 for allowing the steel rule 5 to be inserted thereinto.

9. A method for manufacturing of a rotary cutting die, comprising the steps of:

placing nine veneers 31 each having a thickness of approx. 1 mm that are coated with adhesive on the top side thereof on a cylinder 1 (a ninth veneer 31 being not coated with adhesive); on the nine veneers 31, placing four veneers 31 each having a thickness of approx. 1 mm that are coated with adhesive on the top side thereof (a fourth veneer 31 being not coated with adhesive); covering the four veneers 31 and the nine veneers 31 with a thick cloth 61; by means of rollers 63, winding-up the thick cloth 61 to force the veneers 31 to be wrapped around the outside surface of the cylinder 1; and solidifying the adhesive;

after the solidification by the above step, removing said thick cloth 61; and using a router 4 to cut a 4-point-wide (1.4-mm-wide) groove in an upper plywood 3, with which said four veneers 31 are laminated, for allowing a steel rule 5 to be inserted thereinto; and

5 removing the upper plywood 3 in which the 4-point-wide (1.4-mm-wide) groove is cut; and using the router 4 to cut a 4-point-wide (1.4-mm-wide) groove in a lower plywood 2, with which said nine veneers 31 are laminated, for allowing the steel rule 5 to be inserted thereinto.

10 10. A device for manufacturing a rotary cutting die, comprising a cylinder 1 which is turned around the Y axis; a router 4 which is traveled along the X axis perpendicular to the cylinder 1; a thick cloth 61 for covering veneers 31 which are disposed on the circumference of the cylinder 1, being coated with adhesive; winding-up rollers 63 for causing the veneers 31 to be wrapped around the cylinder 1; and a high-frequency heating device 7 which is installed, being opposed to the cylinder 1, for heating the veneers 31 which are wrapped around the cylinder 1.

11. A device for manufacturing a rotary cutting die, comprising a cylinder 1 which is turned around the Y axis; a router 4 which is traveled along the X axis perpendicular to the cylinder 1; a silicone rubber sheet 6 for covering veneers 31 which are disposed on the circumference of the cylinder 1, being coated with adhesive; a suction chamber 111 which is provided under the cylinder 1 for sucking the silicone rubber sheet 6; and a high-frequency heating device 7 which is installed, being opposed to the cylinder 1, for heating the veneers 31 which are wrapped around the cylinder 1 by means of the suction chamber 111.

12. The device for manufacturing a rotary cutting die of claim 10 or 11, wherein said cylinder 1 is adapted such that the cylinder 1 is turned around the Y axis for

elimination of non-uniformity of heating when the veneers 31 are heated by the high-frequency heating device 7.